

1. An anisotropic polymer layer exhibiting a tilted structure with an optical axis having a tilt angle  $\theta$  relative to the plane of the layer, obtained by polymerizing a polymerizable mesogenic material comprising at least one compound of the formula:



wherein

P is a polymerizable group,

Sp is a spacer group having 1 to 20 C atoms,

X is a group of -O-, -S-, -CO-, -COO-, -OCO-, -OCOO- or a single bond,

n is 0 or 1,

MG is a mesogenic or mesogenicity supporting group:

and

R is an alkyl radical with up to 25 C atoms optionally unsubstituted, mono- or polysubstituted by halogen or CN, optionally one or more non-adjacent CH<sub>2</sub> groups are replaced, independently, by -O-, -S-, -NH-, -N(CH<sub>3</sub>)-, -CO-, -COO-, -OCO-, -OCO-O-, -S-CO-, -CO-S- or -C≡C- where oxygen atoms are not linked directly to one another, or R is halogen, cyano or, independently, P-(Sp-X)<sub>n</sub>- as defined in formula I;

wherein the polymerizable mesogenic material is a mixture of:

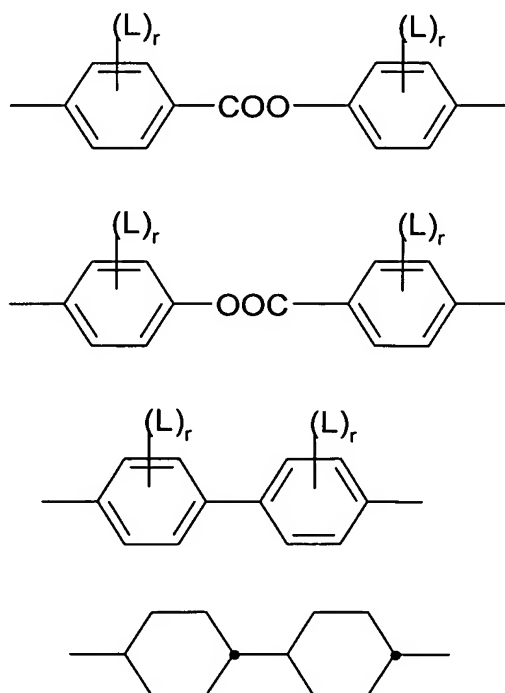
a1) 10 to 99% by weight of at least one mesogen according to formula I having one polymerizable functional group,

a2) 0 to 70% by weight of at least one mesogen according to formula I having two or more polymerizable functional groups, and

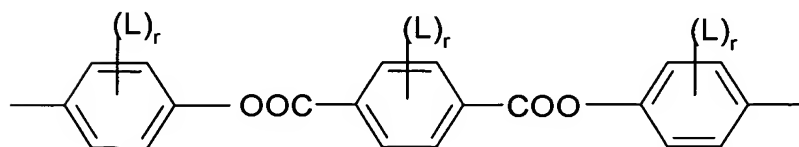
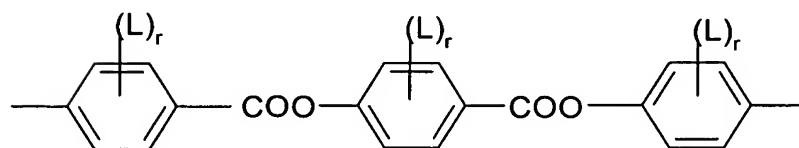
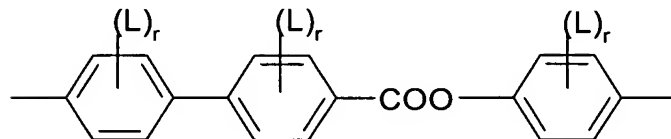
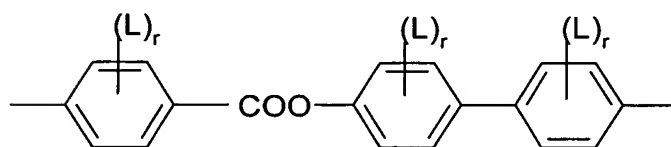
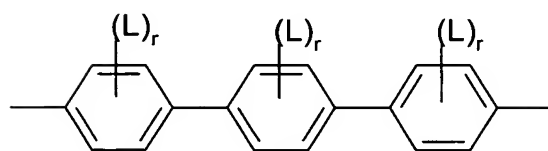
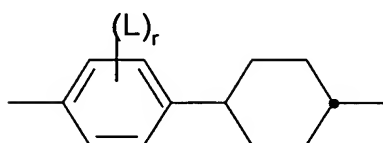
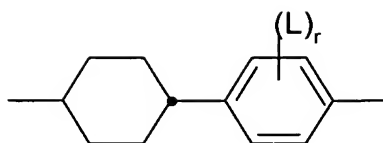
b) 0.01 to 5% by weight of an initiator.

2. A polymer layer according to claim 1, wherein the polymerizable material comprises at least one compound of formula I having one polymerizable group and at least one compound of formula I having two polymerizable groups.

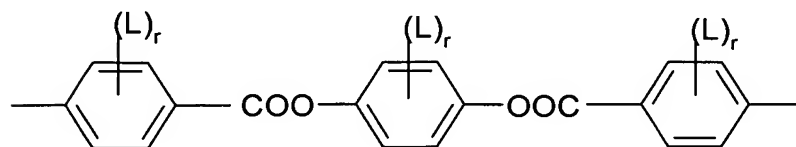
3. A polymer layer according to claim 1, wherein the polymerizable material comprises at least one compound of formula I wherein the mesogenic group MG is of the formulae:



;



or



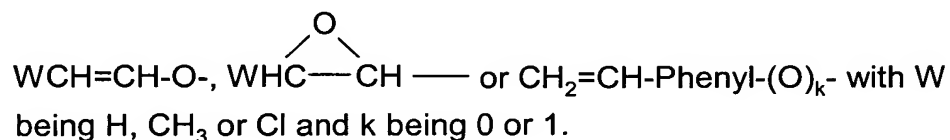
;

where L is: F, Cl, CN, or a fluorinated alkyl, alkoxy or alkanoyl group with 1 to 4 C atoms,

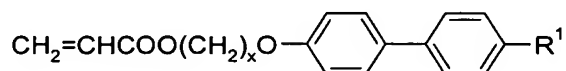
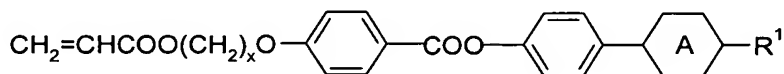
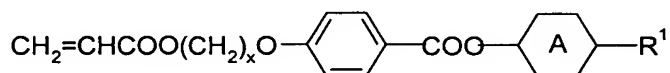
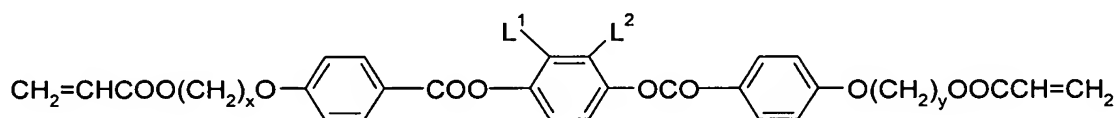
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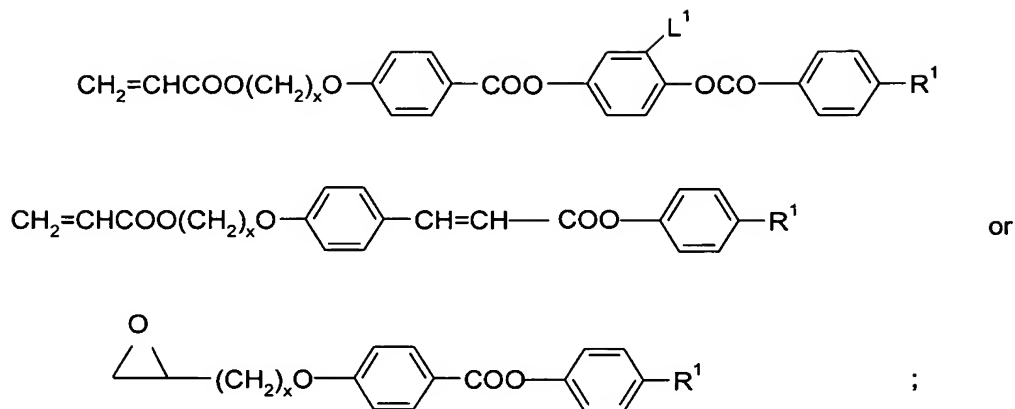
r is 0, 1 or 2.

4. A polymer layer according to claim 1, wherein the polymerizable material comprises at least one compound of formula I where P is:



5. A polymer layer according to claim 1, wherein the polymerizable mesogenic material comprises at least one compound of the formulae:





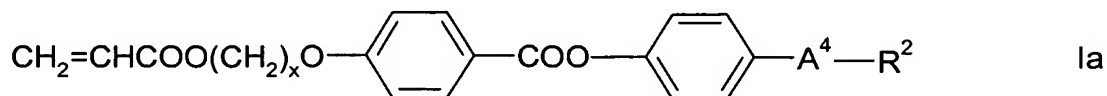
wherein x and y are, independently, 1 to 12, A is a 1,4-phenylene or 1,4-cyclohexylene group, R<sup>1</sup> is halogen, cyano or an optionally halogenated alkyl or alkoxy group with 1 to 12 C atoms, and L<sup>1</sup> and L<sup>2</sup> are, independently, H, F, Cl, CN, or a halogenated alkyl, alkoxy, or alkanoyl group with 1 to 7 C atoms.

6. A polymer layer according to claim 1, wherein the polymerizable material comprises 1 to 80% by weight of at least one dielectrically positive monoreactive mesogenic compound.

7. A polymer layer according to claim 6, wherein said dielectrically positive monoreactive mesogenic compound has a dielectric anisotropy  $\Delta\epsilon > 1.5$ .

8. A polymer layer according to claim 6, wherein said dielectrically positive monoreactive mesogenic compound has a polar terminal group of CN, F, Cl, OCF<sub>3</sub>, OCF<sub>2</sub>H, OC<sub>2</sub>F<sub>5</sub>, CF<sub>3</sub>, OCN or SCN.

9. A polymer layer according to claim 1, wherein the polymerizable material comprises at least one compound of the formula:



wherein x is 1 to 12,  $\text{R}^2$  is  $\text{C}_{1-12}$  alkyl or alkoxy, and

$\text{A}^4$  is 1,4-phenylene, trans-1, 4-cyclohexylene or a single bond;

at least one di reactive compound of formula I; and at least one dielectrically positive monoreactive compound of formula I.

10. A polymer layer according to claim 1, wherein the polymerizable mesogenic material is a mixture of:

- a1A) 10 to 65%, by weight of at least one compound of formula I having one polymerizable group, wherein R is an alkyl or alkoxy group with 1 to 12 C atoms;
- a1B) 5 to 40% by weight of at least one compound of formula I having one polymerizable group, wherein R is CN, F, Cl or a halogenated alkyl or alkoxy group with 1 to 12 C atoms;
- a2) 2 to 90% by weight of at least one compound of formula I having two polymerizable groups, wherein R has one of the meanings of  $\text{P}-(\text{Sp}-\text{X}-)_n$ ; and
- b) 0.01 to 5 % by weight of an initiator.

11. A polymer layer according to claim 1, wherein the mesogenic or mesogenicity supporting group is a compound of formula:



wherein

$A^1$ ,  $A^2$  and  $A^3$  are, independently, 1,4-phenylene where one or more CH groups optionally replaced by N, 1,4-cyclohexylene, optionally, one or two non-adjacent  $\text{CH}_2$  groups are replaced by O and/or S, 1,4-cyclohexenylene or naphthalene-2, 6-diyl, optionally these groups are unsubstituted, mono- or polysubstituted with a halogen, a cyano, or a nitro group, or an alkyl, alkoxy or alkanoyl group having 1 to 7 C atoms, wherein one or more H atoms may be substituted by F or Cl,

$Z^1$  and  $Z^2$  are each, independently,  $-\text{COO}-$ ,  $-\text{OCO}-$ ,  $-\text{CH}_2\text{CH}_2-$ ,  $-\text{OCH}_2-$ ,  $-\text{CH}_2\text{O}-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{C}\equiv\text{C}-$ ,  $-\text{CH}=\text{CH}-\text{COO}-$ ,  $-\text{OCO}-\text{CH}=\text{CH}-$  or a single bond and

$m$  is 0, 1 or 2.

12. A polymer layer according to claim 1, wherein  $n=1$ .

13. A polymer layer according to claim 1, wherein the polymerizable mesogenic material comprises at least 95% by weight of polymerizable compounds.

14. A polymer layer according to claim 1, wherein the tilt angle  $\theta$  relative to the plane of the layer is greater than 0.

15. A polymer layer according to claim 13, wherein the tilt angle  $\theta$  relative to the plane of the layer is greater than 0.

16. A polymer layer according to claim 14, wherein the polymerizable mesogenic material comprises at least 95% by weight of polymerizable compounds.

17. Polymer layers comprising an anisotropic polymer layer according to claim 1.